REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-3 and 5-7 were pending in this application. New claims 9-16 have been added by this reply. Therefore, claims 1-3, 5-7, and 9-16 are pending after the amendments. Claims 1, 5, and 13 are independent claims. The remaining claims depend, directly or indirectly, from claim 1, 5, or 13.

Claim Amendments

Claims1 and 5 have been amended to clarify the invention recited. New claims 9-16 are added. Support for these new claims can be found, for example, in paragraphs [0031], [0032], [0054], and [0060] in the published application No. 2007/0208162. No new matter is introduced.

Rejection(s) under 35 U.S.C. §103(a)

Claims 1-3 and 5-7 were rejected under 35 U.S.C. §103(a) as being unpatentable over Aurelie et al. (WO 03/048225), where Treacher et al. (US 2004/0260090) (hereafter "Treacher") is used as the English equivalent, in view of Son et

al. (US 2003/0094595) (hereafter "Son") and applicant's admitted prior art (hereafter "AAPA"). This rejection is respectfully requested.

To establish a prima facie case of obviousness under 35 U.S.C. §103(a), a prior art reference must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ (C.C.P.A., 1074).

The present invention relates to electric transfer light emitting polymers that can emit light when an electric field is applied thereto. Chlorine (Cl) and the sum total (ΣM) of metal elements included in the polymer satisfy a relation of: $\Sigma M < Cl$, wherein ΣM designates the sum total of metal impurities.

In such polymers for the EL element, impurities composed of, for instance, an inorganic element, specifically, a metal element such as sodium, nickel, palladium, or impurities such as chlorine may be mixed in a process for synthesizing a polymer. (¶ [0006]).

When the impurities such as the metal element are mixed in the polymer for the EL element used in the light emitting layer of the organic EL element, the impurities may cause inconveniences that the impurities become, for instance, conditions of metal ions in the light emitting layer to serve to quench the light and lower a light emitting efficiency, or react with the polymer to deteriorate the polymer itself, shorten the life of the organic EL element, and further change a light emitting color. (¶ [0007]).

Therefore, after synthesis of such organic polymers, methods of the invention include steps to reduce these impurities by washing with an EDTA solution (e.g., EDTA/2NH_4 or EDTA/2Na solution) to chelate the impurities. The EL polymers of the invention have improved current efficiencies. (¶ [0054], [0060], Tables 1-4).

The Examiner cites Treacher as teaching the same type of polymers. However, the Examiner admits that Treacher is silent with respect to the presence of Cl. (Office Action, p. 3, ¶ 5). The Examiner also cites Son for teaching similar polymers and for teaching the need to reduce impurities to as little as possible. (Office Action, ¶ 6) (emphasis added).

Therefore, based on these prior art teachings, one skilled in the art would expect that the lower the concentrations of these impurities are, the better the performance of these polymer would be. However, the inventors of the present invention have *unexpectedly* found that this is not true.

For example, Example 6 has substantially more Ni and Cl impurities than Example 4, and yet Example 6 has a higher efficiency. (¶ [0066], Table 1). Similarly, Example 12 has substantially more Ni and Cl impurities than Example 10, and yet they have the same efficiency. (¶ [0084], Table 2). Likewise, Example 18 has substantially more Ni and Cl impurities than Example 16, and yet they have the same efficiency. (¶ [0101], Table 3). One skilled in the art would not have reasonably expected these results.

Instead, inventors of the invention have found that the high efficiencies of these polymers correlate with low Cl concentrations (e.g., less than 50 ppm). More importantly, high efficiency polymers all have total metal impurities less than the chlorine impurity, i.e., $\Sigma M < Cl$, as required by independent claims 1 and 5. This is an unexpected finding. None of the prior art reference teach or suggest this limitation.

Therefore, independent claims 1 and 5 are patentable over Treacher in view of Son and AAPA. Dependent claims 2-3 and 6-7 should also be patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

New Claims

New claims 9-12 depend from claim 1 or 5. Therefore, these claims should also be patentable for the same reasons set forth above.

New independent claim 13 includes the same limitation (i.e., $\Sigma M < Cl$) as independent claims 1 and 5. Furthermore, claim 13 recites the steps of treating the polymer products with EDTA (specifically, EDTA/2NH_4 or EDTA/2Na) to chelate the impurities, which is not taught or suggested by any of the cited prior art references. This treatment step has been shown to result in low impurities, particularly low metal impurities such that $\Sigma M < Cl$. Therefore, new claim 13 and dependent claims 14-16 should also be patentable.

Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 17155/005001).

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Respectfully submitted,

By _____ #45,079

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